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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,451	09/08/2003	William P. Parker	116-001b	1455

7590 10/17/2005

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EXAMINER	
JUBA JR, JOHN	
ART UNIT	**PAPER NUMBER**
2872	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/657,451	PARKER ET AL.	
	Examiner	Art Unit	
	John Juba, Jr.	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2005 and 28 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) *20/(7,12,17), 21-26, and 81* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 5, 20/2, 73-75 and 91* is/are rejected.

7)☒ Claim(s) *3, 70-72, 76, 78, and 90* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 1-3, 5, 20/(2,7,12,17), 21-26, 70-76, 78, 81, 90, and 91.

DETAILED ACTION

Claim Objections

Claim 78 is objected to for the following informality. Appropriate correction is required.

In claim 78, there is no antecedent basis for said "clipping" or said "bottoming out".

Although claims 20/7, 20/12, and 20/17 are currently withdrawn from consideration, it is noted that their parent claims (7, 12, and 17) have been canceled. Thus, as a multiply dependent claim, claim 2 cannot be in condition for allowance until *at least* any dependency from canceled claims is resolved.

Similarly, although claims 12 – 26 are currently withdrawn from consideration, these claims cannot be passed to issue (upon any rejoinder) until *at least* any dependency from canceled claims 7, 12, and 17 is resolved.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, and 75 are rejected under 35 U.S.C. 102(b) as being anticipated by Greenaway (U.S. Patent number 3,602,570). Referring *for example* to the method

implemented in Figure 2, Greenaway discloses a method of fabricating a holographic "mask" comprising the steps of

(a) providing an illumination source (200) for generating a coherent illumination beam (208) directed along an axis (O - O');

(b) providing a non-opaque object mask having a substantially planar, annular region (210) capable of transmitting a portion of said illumination beam as undiffracted reference wavefronts, the annular region (210) comprising any number of arbitrarily divided planar regions of arcuate wedge shape or narrower annular bands, the mask having one or more substantially transparent elements (216)(218) for creating overlapping object wavefronts when said illumination beam is incident thereon;

(c) disposing said object mask in said illumination beam [the planar regions and transparent elements are integrated into a single frame, and thus fairly constitute a "mask"(Col. 3, lines 43 - 52)];

(d) providing a holographic recording medium (214) in said illumination beam in line with said object mask wherein said holographic recording medium has a central inactive region in the shape of a circle and a central active region in the shape of an annulus (see *e.g.*, Fig. 8);

(e) illuminating the object mask with said illumination beam , wherein said illumination beam directed along said axis causes said object mask to allow undiffracted reference wavefronts (212) to pass therethrough, wherein said object mask does not shadow said [active and/or annular] central region of said

recording medium from said undiffracted reference wavefronts, and wherein said illumination beam directed along said axis causes said one or more substantially transparent elements (216)(218) to create object wavefronts which interact with said undiffracted reference wavefronts to create an interference pattern; and

(f) recording said interference pattern in at least said central, active region of said holographic recording medium.

With regard to claim 2, one of the transparent elements is a diffuser, which fairly constitutes a "scattering element" (Col. 5, line 10).

With regard to claim 75, the interference pattern is recorded in a continuous annular "active area" of the hologram plate (214) to form a "continuous diffracting region".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 20/2, 5, 73, and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenaway (U.S. Patent number 3,602,570). [The text of this rejection stands as set forth in the Office action of January 25, 2005, and is repeated here only for convenience.]

As set forth above for claims 1 and 2, Greenaway discloses the invention substantially as claimed. However, Greenaway does not expressly identify the one or more transparent elements in the embodiment of Figure 2 as phase-altering elements which are indentations in the object mask (claim 20/2) and does not disclose an array of transparent elements (claim 5). Rather, Greenaway discloses a transparent element as being a diffuser. In the discussion of the prior art, Greenaway teaches that "a sheet of ground glass" is a well-known diffuser construction useful in holographic recording (Col. 2, lines 66 – 70). Thus, it would have been obvious to one of ordinary skill to use a sheet of ground glass for the transparent element (216) of Greenaway, since a sheet of ground glass was well-known to be a useful diffuser suited to holographic recording, as suggested by Greenaway. It will be appreciated that a sheet of ground glass comprises "indentations" which inherently shift the phase of light relative to the non-indented regions. When situated within the central opening of the mask, the transparent elements would thus have comprised a plurality of phase altering elements in the form of indentations in the phase mask.

With regard to claim 5, the examiner believes that the ordinary meaning of "array" is sufficiently broad so as to include any impressive number or collection of things, rather than being particularly limited to an orderly arrangement of things. As such, it is believed that the ground glass diffuser suggested by Greenaway fairly comprises an impressive number of indentations or, an "array" of transparent elements (indentations).

With regard to claims 73 and 74, Greenaway discloses the invention substantially as claimed. However, Greenaway does not disclose an optical density between 0.1 and

5.0 (claim 73) and does not disclose a beam intensity ratio between 0.1:1 – 100:1 (claim 74). Nonetheless, Greenaway discloses the substantially planar regions of annular attenuator (210) as comprising a semi-transparent metal layer (Col. 3, lines 25 – 30). It will be appreciated that, in order to attenuate the beam, such a layer *inherently* has *some* optical density. Further, Greenaway teaches that the purpose of the annular attenuator is to provide the "optimum ratio" between the reference and object beam intensities (Col. 1, lines 59 – 61). Thus, in practicing the invention of Greenaway, it appears that one of ordinary skill would have arrived at an optical density (of the attenuator) between 0.1 and 5.0 through only routine experimentation in the process of providing an optimum attenuation that provides the "optimum" beam intensity ratio, as suggested by Greenaway. Further, barring any *unexpectedly* improved result arising from the particular selection of a beam intensity ratio lying between 0.1:1 – 100:1, it appears that one of ordinary skill would have arrived at such a ratio, through only routine experimentation in discovering the "optimum" ratio discussed by Greenaway.

Claim 91 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greenaway (U.S. Patent number 3,602,570), in view of Graham, et al (U.S. Patent number 4,952,798). [The text of this rejection stands as set forth in the Office action of January 25, 2005, and is repeated here only for convenience.]

As set forth above for claims 1 and 73, Greenaway suggests the invention substantially as claimed. Further, Greenaway expressly teaches that the

semitransparent layer may be formed of a metal film layer. However, Greenaway does not disclose the semi-transparent layer as particularly being chrome.

Graham, et al discloses an optical attenuator wherein the attenuation is provided by a semi-transparent film. Graham, et al teaches that chrome was well known to be suited for use in a semi-transparent layer that provides optical attenuation (Col. 4, lines 10 – 25).

It would have been obvious to one of ordinary skill to use chrome as the attenuating metal layer of Greenaway, since Graham, et al suggests that chrome is suitable for such use. It has been held that the selection of a known material, based upon its known suitability for a given use, does not represent a patentable advance.

Allowable Subject Matter

Claims 3, 70 – 72, 76, 78, and 90 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims

The following is a statement of reasons for the indication of allowable subject matter: The prior art, taken alone or in combination, fails to teach or fairly suggest a method of fabrication a holographic mask comprising the *combination* of method steps

wherein the step of illuminating the object mask involves scanning said illumination beam over said object mask, as recited in claim 3;

wherein the recording step (f) includes recording said interference pattern in said holographic recording medium without "clipping" or "bottoming out" of the interference pattern, as recited in claim 70;

wherein the method further comprises the step of transferring said recording of said interference pattern to a durable substrate to provide a durable holographic mask, as recited in claim 72;

wherein the step of providing the non-opaque object mask includes the photolithographic and etching steps recited in claim 76; or

wherein the recording step (f) includes controlling exposure time, intensity of illumination, and developing procedure to avid "clipping" or "bottoming out", as recited in claim 78.

Response to Amendment

Applicants' amendment of the specification is sufficient to perfect the claim for priority under 35 U.S.C. §119(e) and §120. The examiner wishes to apologize for requiring the submission of a petition for entry of the late claim. It is clear that the Office recognized Applicants' claim in a timely manner. The formal requirements had simply not been met earlier.

In light of Applicants' effective filing date, the previous rejection of claims 1 – 3, 5, 20/2, 70 – 76, 78, 90, and 91 under 35 U.S.C. §102(b) as being clearly anticipated by Parker, et al (U.S. Patent Appl. Pub. no. 2002/0039209 A1) is *withdrawn*.

Applicants' amendment of claim 1 is not sufficient in overcoming the rejection of claims 1, 2, and 75 under § 102(b) as being anticipated by Greenaway (U.S. Patent number 3,602,570). As now set forth in the rejection, the holographic recording medium of Greenaway may be regarded as comprising a central, inactive region, a central, active region, and a peripheral, inactive region. The examiner believes that, since the object mask of Greenaway is not downstream of the undiffracted reference wavefronts, it *cannot* shadow any of the active regions "from said undiffracted wavefronts". In any event, it does not shadow at least the active central hologram region.

Since the Greenaway reference is believed not to be deficient with respect to the newly recited limitations, the previous rejection of claims 20/2, 5, 73, and 74 under §103(a) as being unpatentable over Greenaway (U.S. Patent number 3,602,570) stands as previously set forth. Applicant notes that the semitransparent layer of Greenaway is annular and that the interference pattern is formed only in an annular area. The examiner believes that the active annular region of Greenaway, being central to a peripheral inactive area, is fairly a "central region". Applicants do not identify any language in claims 73 and 74 that precludes the semitransparent area from being of annular shape. No argument is presented further in support of the patentability of claims 20/2 or 5.

Since the Greenaway reference is believed not to be deficient with respect to the newly recited limitations, the rejection of claim 91 under §103(a) as being unpatentable over Greenaway (U.S. Patent number 3,602,570), in view of Graham, et al (U.S. Patent number 4,952,798) stands as previously set forth.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Juba whose telephone number is (571) 272-2314. The examiner can normally be reached on Mon.-Fri. 9 - 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Drew Dunn whose number is (571) 272-2312 and who can be reached on Mon.- Thu., 9 – 5.

The **new centralized fax phone number** for the organization where this application or proceeding is assigned is (571) 273-8300 for *all* communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2800.

JOHN JUBA, JR.
PRIMARY EXAMINER
Art Unit 2872

October 4, 2005